

### **REMARKS**

Prior to entry of Applicant's March 5, 2008 Amendment After Final, Claims 1-43 are pending and stand rejected in the Final Office Action issued December 5, 2007. With this Supplemental Amendment After Final, Claims 1, 10, 11, 13, 20-22, 25, 29, 30, 35, and 36 are amended. Upon entry of both Amendments, Claims 1-43 remain pending.

Support for the amended claims is found in the specification as originally filed, including the claims. Support for the recitation of vulcanization above the melting point of the thermoplastic is found for example in paragraph [0079]. Applicant respectfully requests entry of the Amendment.

### **REJECTIONS OVER *YOKOKAWA, OZAWA, EISINGA, DEANTONIS, AND KOLB***

Sections 1-14 of the of December 5, 2007 Office Action repeat the rejections of Claims 1-43 over various combinations of *Yokokawa* and other references. In response, Applicant maintains his position that the claims are patentable over the reference for the reasons discussed in the August 30, 2007 Amendment and the Amendment After Final filed March 5, 2008. *Yokokawa* does not teach or suggest partial dynamic cure as recited in the claims. Applicant has amended the claims to clarify yet further the difference between the claimed invention and the disclosure of the applied references. Accordingly, Applicant respectfully traverses the rejection as applied to the amended claims and requests reconsideration.

Independent Claims 1, 10, 22, 29, and 35 have been amended in various ways to recite that partial cure, partial dynamic cure, and the like is carried out while mixing fluoroelastomer, thermoplastic, and curing agent at a temperature above the melting point of the thermoplastic. The amendments make explicit the dynamic vulcanization reaction conditions that were implicit in the claims before amendment – the partially cured dynamic vulcanizate is prepared by heating

for a time less than that required to completely cure the elastomer at a temperature above the melting point of the thermoplastic. These conditions are described for example in paragraph [0079] of the specification.

In *Yokokawa*, blending of resin with curing agent is carried out below the melting temperature of the thermoplastic, as seen in the following passages (emphasis added throughout):

The method of the invention comprises the steps of (a) mixing a **poly(vinylidene fluoride) resin** with a fluorinated elastomer at a temperature between the temperature 70° C below the melting temperature of the poly(vinylidene fluoride) resin and the decomposition temperature of the same resin to form a homogeneous resin blend, (b) adding a curing catalyst to the resin blend after cooling followed by mixing together, and (c) shaping the resin blend into an article with heating the elastomer to cure. *Col. 2, lines 7-16, emphasis added*

The **poly(vinylidene fluoride) resin** has a melting temperature ranging from 130° to 195° C as measured by the DTA (differential thermal analysis) method. *Col. 2, lines 41-44*

The curing catalyst is added to the resin blend at a temperature in the range from 30° to 120°C or, preferably, from 40 to 100°C, since a homogeneous dispersion of the catalyst cannot be achieved rapidly at temperatures below 30° C, while satisfactory **blending is also difficult at temperatures above 120° C** due to partial curing reaction having already taken place during the blending operation. *Col. 4, lines 50-57*

The passages from *Yokokawa* establish that the thermoplastic poly(vinylidene fluoride) resin of the reference has a melting point from 130-195°C and that curing catalyst is added when the temperature is no more than 120°C. Naturally, no curing takes place in *Yokokawa* until the curing agent is added. Because of the temperature conditions in the passages above, any partial cure that takes place in *Yokokawa* takes place in a resin blend that is intentionally kept below the melting temperature. The curing agent never sees a temperature above the resin melting temperature.

On the other hand, the amended claims recite that partial dynamic vulcanization is carried out explicitly at a temperature above the melting point of the thermoplastic. This clearly distinguishes *Yokokawa*, which teaches using lower temperatures. In fact, *Yokokawa* teaches

away from using temperatures above the melting point. The passage from column 4 states blending is difficult above 120°C because of partial curing that would take place. This is an explicit teaching not to do what applicants have done.

For these reasons, Applicant respectfully submits the amended claims are patentable over *Yokokawa*. This applies directly to Claims 1, 4, 9-16, 18, 19, 35, 38, 38, and 40-43 in section of the December 5, 2007 Office Action.

Sections 2-14 recite rejections of other claims as obvious in view of *Yokokawa* and various secondary references such as *Eisinga*, *Ozawa*, *DeAntonis*, and *Kolb*. Applicant submits none of the secondary references are sufficient to overcome the deficiencies of the primary *Yokokawa* reference as applied to the amended claims. Accordingly, Applicant respectfully requests the §103 rejections of the claims over *Yokokawa* be withdrawn.

#### **REJECTIONS OVER THE *TAKEYAMA* REFERENCE**

Sections 15, 16, and 17 of the Office Action present new rejections of Claims 1, 10, 22, 29, and 35 as obvious over the *Takeyama* reference (U.S. Patent No. 6,079,465) in view of *Yokokawa* and *Ozawa*, discussed above. Applicant respectfully traverses the rejection as applied to the amended claims and requests reconsideration.

As noted in the Office Action, *Takeyama* does not teach partially curing the elastomer composition by dynamic vulcanization. The dynamic vulcanization process described in column 10 of the reference does not amount to a teaching of partially curing as recited in the claims. Necessarily, it does not disclose completing the cure while in contact with a substrate. Contrary to the position taken in the Office Action, any teaching to provide partial cure is found only in the current specification.

To arrive at the subject matter of the claims, *Takeyama* needs to be modified to 1) particularly select fluorocarbon elastomers and prepare them by the dynamic vulcanization taught in the reference, and 2) to add the condition that vulcanization is carried out to an incomplete state. All of these features are said to be supplied by *Yokokawa* and *Ozawa* as secondary references.

But *Yokokawa* is deficient with respect to the amended claims because it does not disclose any dynamic vulcanization above the melting point of the thermoplastic, whether it is partial cure or not. Because of this significant difference, Applicant submits *Takeyama* and *Yokokawa* can not be combined and applied against the amended claims, except with the use of hindsight based on the current specification. Indeed, the teaching of *Yokokawa* is more directed to an uncured resin blend, because it teaches to avoid high temperature that would lead to partial cure (see the third passage quoted above). In any event, it does not supply the elements missing in *Takeyama*. Applicant notes that *Ozawa* does not disclose any dynamic cure at all, and so does not overcome the deficiency of the combined *Yokokawa* and *Takeyama* references.

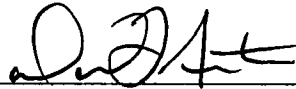
For these reasons, Applicant respectfully submits the amended claims are patentable over the cited references. Accordingly, Applicant respectfully requests that the rejections, as applied to the amended claims, be withdrawn.

**CONCLUSION**

For the reasons discussed above, Applicant believes that Claims 1-43 are in an allowable condition and respectfully requests a Notice of Allowance. The Examiner is invited to telephone the undersigned if that would be helpful to resolving any issues.

Respectfully submitted,

Dated: May 5, 2008

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